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Banking Efficiency in Bahrain: Islamic vs Conventional Banks

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CONTENTS

Abstract

In this paper we examine the performance of Bahrain as a leading financial center in the Gulf region. We estimate how close Bahrain banks are from their potential profits that a best-practice bank can earn and compare the profit efficiency of Islamic vs conventional banks. We employ the Fourier-flexible functional model to estimate the profit efficiency index.

Our findings show that the profit efficiency of Bahrain banks is relatively stable and in line with the OECD banks. In general, there is no much difference in profit efficiency between Islamic and conventional investment banks, despite the fact that many Islamic banks are small and act as venture capital. In contrast, the only Islamic commercial bank in the sample outperforms the conventional counterparts. This was due to lack of competition whereby the Islamic commercial bank was able to reduce inputs costs and charge higher mark-up.

In order to sustain Bahrain's position as a leading Islamic financial center and meet the challenges of liberalized global financial market, two strategic policies have to be considered: First, small Islamic investment banks have to consolidate aiming for a greater market share, reducing foreign competition and gaining services delivery advantage. This issue is of immediate concern. Second; lack of competition hindered the development of the Islamic commercial banking in Bahrain. The BMA has to encourage a broader base of Islamic commercial banking in Bahrain in order to absorb the increasing demand on Islamic financial services and products. The BMA has to encourage reputable financial institutions, which can provide comprehensive range of Islamic financial services, to operate in the market.

1. Introduction:

The Kingdom of Bahrain is the leading financial center of the Gulf region, it has been awarded A-sovereign by Standard & Poors in 2002 and Fitch in 2003. Bahrain as a financial center has grown significantly in the 1970s following the 1973-74 sharp increase in oil price which created the need for an active financial and banking center to recycle the substantial financial surplus of the region. In 1975, Bahrain has taken the lead and invited major international banks to open branches in the island and operate as offshore banking units (OBUs). The response of the international banks to Bahrain's invitation was overwhelming and the number of OBUs reached 76 in 1984.[1] It has since developed a wide range of financial products and services in commercial, investment and corporate banking.

Bahrain has also established itself as the leading center for Islamic finance in the Middle East. Bahrain is the host of the largest concentration of Islamic banks in the region. Since 1979, Islamic financial institutions have grown considerably in Bahrain, the consolidated balance sheet of Islamic banks has shown total assets of $8.4 bn in December 2001. Islamic banks complement the activities and operations of other traditional financial institutions, they provide a variety of financial products ranging from traditional Islamic modes of finance such as mudaraba, murabaha, leasing and musharaka to Islamic syndicated finance and collective investment funds.

The aim of the study is to examine the performance of Bahrain banking sector and estimate how close Bahrain banks are from their potential profits (profit efficiency) over 1985-2001. This issue is important because the financial sector plays a major role as a key sector in Bahrain's economy. Financial sector is the largest employer and contributor to the economy, accounting for over 20 per cent of GDP. We also compare the efficiency of Islamic *vs* conventional banks in Bahrain. So far, there are few empirical papers devoted to Islamic banking. Furthermore, the issue of efficiency in banking is important at the micro and macroeconomic levels since efficiency has important policy implications. In the past, financial institutions used to enjoy local oligopolies and therefore make rewarding profits, but in recent years

[1] In 1975, Citibank and Algemene Bank were the first OBUs to operate in Bahrain.

banking industry faces competitive pressure worldwide as the financial structure changes rapidly. Furthermore, bank efficiency is a socially optimal target since it reduces the average cost of financial transactions and therefore enhances the society's welfare.

The paper proceeds as following: Section two gives an overview of Bahrain's economy and Section three explains the structure of the banking sector in Bahrain. Section four is devoted to Islamic banking in Bahrain. The discussion of the efficiency concepts is given in Section five. Econometric methodology is explained in Section six. Hypotheses and model specifications are provided in Section seven. Data analysis and empirical results are discussed in Section eight. Then, Section nine concludes.

2. Economy of Bahrain: An Overview

The Bahrain economy has doubled in size over the last 15 years, GDP has been growing consistently since 1989. Bahrain has one of the highest average income in the Middle East. In 2000, per capita GDP has reached BD 4343. Bahrain has the highest literacy rate in the Arab world and the longest life expectancy in the region. According to UNDP human development index (2003), The kingdom of Bahrain is ranked 37th out of 173 countries with a rating of "high" and first in the Arab world.

The economy of Bahrain is based on the petroleum industry, transit trade, and financial services. Services account for about two-third of GDP. Bahrain benefited from the region's economic boom in the 1970 and 1980s. During that time, Bahrain's government had encouraged economic diversification, it has focused on the development of its non-oil industry by investing heavily on industrial infrastructure and heavy industries. Due to diversification away from the oil sector, the contributions of the oil and gas sectors to GDP have declined from 25 per cent to around 18 per cent. The industrial development has grown in importance and currently the manufacturing sector provides about 12 per cent of GDP. Bahrain mainly produces Aluminum, which generates 40 per cent of the country's non-oil export earnings, ship-building, and light goods such as furniture and fiberglass. Furthermore, tourism is Bahrain's fastest growing industry, a major source of employment and contributes about 10 percent of GDP (HSBC, 2001).

Bahrain, a member of the World Trade Organisation, has a liberal trade policy and its trade balance is usually in surplus except when oil prices have been exceptionally low (such as in 1998). Oil and gas account for almost 70 percent of Bahrain's merchandise exports. Bahrain depends on imports for most of its needs, but is striving towards replacing 30 per cent of its imports with domestic production. The government actively promotes foreign investment, it allows 100 per cent foreign ownership of new industrial enterprises and the establishment of representative offices of branches of foreign companies without local sponsors. The Kingdom of Bahrain has been ranked 40th out of 160 countries, topping the Arab countries in terms of attracting foreign direct investment as published in the United Nations Annual World Investment Report (2002).

Bahrain's government spending accounts for 30 per cent of GDP. Receipts from oil, gas and borrowing from investment funds are the main sources for budgetary revenues. Oil revenues are greater than 50 per cent of total government revenues. There is a need to diversify government revenue and reduce reliance on oil production. Since the mid-1980s, Bahrain has had persistent budget deficit almost every year depending on oil prices. Budget deficits are mainly financed through treasury bills and long-term development bonds. In the last five years, the general government balance has recorded an average surplus of 2.6 percent of GDP. Standard & Poors report (2002) shows that Bahrain's general government debt and debt-service burden are relatively low compared to peers. The government debt stood at about 18 per cent of GDP in past five years, while interest payments are relatively small, representing about 1.5 percent of GDP.[2]

The Bahrain Monetary Agency (BMA), the Kingdom central bank, has maintained a restrictive approach to monetary policy to protect the dinar which is pegged to the SDR at a rate of BD 0.376 per SDR for almost twenty years and recently the dinar is pegged to the US dollar at the same rate of 0.376. The long-standing fixed exchange rate regime has served Bahrain well in maintaining financial stability. Thus, interest rates on dinar have been close to their US dollar counterparts. The BMA can

[2] All of the government's external debt is to regional development funds where external funds are used to finance major infrastructure projects.

influence short term liquidity through money market operations (indirect monetary policies).

The combination of a stable and predictable exchange rate, prudent fiscal policy, and free movement of goods and services has maintained inflation low and stable at less than 3 per cent a year throughout the 1980s and 1990s (HSBC, 2001).

With unemployment at about 10 per cent, job creation has been on the top agenda of Bahrain's government. The government has tackled the unemployment problem by increasing the number and diversity of training schemes and revising labour laws.

3. Banking Sector in Bahrain:

Bahrain's development as a major regional financial center is the most significant outcome of the economic diversification effort. Bahrain has the largest concentration of banks in the Arab world. The number of financial institutions operating in Bahrain has grown rapidly over the recent years. Currently, there are nearly 200 financial institutions operating in Bahrain, of which 23 are commercial banks, 36 are investment banks, 51 are offshore banking units (OBUs), 29 are representative offices, and two are specialized banks.[3] Some of the world's largest investment and offshore banking units are represented in Bahrain, including Citigroup, HSBC, Merrill Lynch, JP Morgan, and UBS. Siddiqi (2001) argues that Bahrain banking sector is exceptionally vibrant and on a par with Organisation for Economic Cooperation and Development (OECD) standards.

Bahrain's financial sector offers a diversity of financial products and services that include syndication, corporate financing and restructuring, issuance of initial public offering, global portfolio services, trade finance and other advisory services.

The consolidated balance sheet of the banking system in Bahrain (commercial banks, OBUs, and investment banks) has reached $103.8 bn

3 The government has a full ownership of a housing bank, 49 percent stake in the National bank of Bahrain, and 33 percent stake in Bahrain Development Bank. In addition, the two social security funds hold substantial stakes in the banking sector.

in September 2002. The OBUs represent 85.9 per cent of the consolidated balance sheet, while commercial and investment banks account for 10 and 4.1 per cent, respectively.

The OBUs in Bahrain serve the whole Gulf and offer large number of activities. For example, some OBUs can be seen as marketing and administration centers, while others provide international wholesale banking services and fund gathering for their head offices. Other OBUs are arms of local banks with regional retail business (BMA, 1994). Domestic assets and liabilities of the OBUs amount to $3.6 and $5.2 bn, respectively, while foreign assets and liabilities stand at $85.5 and $83.9 bn in September 2002. Geographically, the OBUs liabilities are globally diversified with 26% from the GCC, 33% from Europe, 17% from America, and 12% from Asia. Furthermore, the OBUs assets are widely distributed among the GCC (23%), Europe (32%), America (22%) and Asia (14%).

A significant contribution of the OBUs has been in the establishment of wholesale money and interbank markets in the region. Prior to the establishment of the Bahrain market, funds used to move out of the Gulf to other regions with higher returns, but the Bahrain market soon became sophisticated enough to offer to large investors the opportunity of lending and borrowing funds within the region. To achieve this, banks in Bahrain offer interest rates and other terms that are competitive with other financial centers. The presence of the OBUs has also helped in the development of a forward currency market in the region where the growth of this market has been fast (BMA, 1994).

The structure of the deposits composition is sound in Bahrain banks where current account deposits ranged between 10% to 14% of GDP in 1985-2001, while the percentage of total deposits to GDP was between 52%-75% during the same period. On the other hand, the private credit has increased from around 35% of GDP in 1980s to about 45% in the 1990s.

Siddiqi (2001) argues that the onshore market is over-banked with 23 commercial banks serving a population of 676,500 inhabitants. The consolidated balance sheet of the commercial banks has reached $10.4 bn in September 2002. Commercial banks were able to double their total and private deposits over the last 10 years. Total deposits in commercial

banks increased from $3.7 bn to $7.5 bn over 1992-2001 and private deposited went up from $2.9 bn in 1992 to $5.8 bn in 2001. The break-down of commercial banks domestic loans by main economic sectors shows that 52 per cent went to business enterprises, while personal and government sectors account for 41 and 7 per cent, respectively. All commercial banks have healthy profits for several years.

Furthermore, investment banks are permitted to practice certain financial activities such as loans and advances (but not overdrafts) to non-residents, accept deposits from banks in Bahrain and outside, and from non-banks outside Bahrain provided that deposits have a minimum value of $50,000. On the other hand, investment banks cannot issue cheque books or provide other current account facilities. It can be noticed that despite domestic liabilities of the investment banks is very small fraction of total liabilities (5-7 per cent), investment banks hold about 25 per cent of their assets in Bahrain, mainly in interbank transactions. On the contrary, investment banks invest the bulk of the foreign assets in affiliates and securities.

The BMA is responsible for the licensing, supervision and regulation of all banks and financial institutions in the economy (including insurance companies and Bahrain Stock Exchange from August 2002). The BMA, established in 1973, is among the most competent financial supervisors in the Middle East and Asia (Siddiqi, 2001). Banks in Bahrain are subject to a minimum capital adequacy ratio (CAR) of 12 percent. All banks, including foreign-owned banks, must comply with the tight guidelines on debt provisions and with international standards. At the end of 2001, CAR reached an average of 14 percent for the whole banking sector, and was 19 percent for the largest commercial banks. Despite non-performing loans (NPLs) reached 11 percent of total loans by end of 2001, loan-loss provisions accounted for 90 percent of NPLs.[4]

To the best of our knowledge, there are only two empirical papers that addressed the issue of banking efficiency in Bahrain. Al-Jarah and Molyneux (2003) investigate banking efficiency in 82 banks operating in Jordan, Egypt, Saudi Arabia and Bahrain over the 1992-2000 period. They use the stochastic frontier and Fourier-flexible form to estimate cost

[4] Most of the NPLs are old debts and are being carried on for legal reasons.

efficiency, scale elasticity and scale efficiency levels in these banking systems. Islamic banks are found to be the most cost efficient while investment banks are the least. They argue that this result perhaps reveals the fact that the cost of funds for Islamic banks is relatively cheaper than the cost of funds for other financial institutions. Large banks, in assets terms, appear to be relatively more cost profit efficient. This possibly signals the ability of large banks to utilise more efficient technology with less cost, the ability of these banks to introduce more specialised staff for the most profitable activities and the ability of these banks to provide (presumably) better quality outputs for which they can charge higher prices. Geographically, Bahrain is the most cost efficient while Jordan is the least.

In their paper, Hassan et al (2003) investigate relative efficiency of the banking industry in Bahrain by employing a panel of 31 banks for the years 1998 and 2000. They employ non-parametric (Data Envelopment Analysis) to estimate efficiency measures. The results show that average allocative inefficiency is about 37%, whereas the average technical inefficiency is about 77%. This indicates that the dominant source of inefficiency in Bahrain banks is due technical inefficiency rather than allocative inefficiency, which is mainly attributed to diseconomies in scale. Overall, average scale inefficiency is about 26%, and average pure technical inefficiency is about 41%, suggesting that the major source of the total technical inefficiency for Bahrain banks is pure technical inefficiency (input related) and not scale inefficiency (output related).

Hassan et al also examine if there are any differences in efficiency measures between domestic and foreign banks in Bahrain. The results show that domestic and foreign banks differ from each other only in scale efficiency. In all other efficiency measures, there are no differences between their performances. Foreign banks are more scale efficient than domestic banks. Finally, regression analysis is used to investigate the determinants of the overall efficiency scores. They find that larger and profitable banks are more likely operate at higher level of efficiency. Also, another finding revels that market power plays an important role in cost and technical efficiencies. Notably, banks with greater contribution from shareholders tend to be more technical efficient.

4. The Islamic Banking in Bahrain:

The emergence of Bahrain as the hub of Islamic banking and finance has added another dimension to the diversity of the financial activities and services available in the Gulf region. Islamic banking began in Bahrain in 1979 with the establishment of the Bahrain Islamic Bank. As Bahrain developed as a major financial center in the region, many other Islamic banks and financial institutions were established in Bahrain. Currently, there are also 26 Islamic financial institutions based in Bahrain, of which 16 are investment banks, 3 are offshore banking units, 4 are commercial banks, an investment advisor and an Islamic infrastructure fund. The Islamic financial institutions that exist in Bahrain include the General Council for Islamic Banks and Financial Institutions, the International Islamic Financial Market, the Liquidity Management Center, the Accounting & Auditing Organisation for Islamic Financial Institutions, and the Islamic Credit Rating Agency.

Islamic banks operating in Bahrain are diversified globally whereby the GCC, EU, and North America are the main markets for their products. Islamic banks in Bahrain are growing fast especially over the last ten years. At the end of 2001, the consolidated balance sheet of the Islamic banks in Bahrain stood at $8.4 billion. But the current market share of the Islamic commercial banks in Bahrain is still quite small compared with their conventional counterparts. For example, commercial Islamic banks have 5% and 7.5% market share, in terms of total assets and total deposits, respectively, in 2002.

The principal Islamic financial instruments that Islamic banks use are:[5]

i. Murabaha (Cost Plus Financing)
ii. Mudarabah (Profit Sharing Agreement)
iii. Musharaka (Equity Participation)
iv. Ijarah muntahia bittrmleek (Leasing)
v. Commodity Murabaha
vi. Salam and Parallel Salam (Deferred Delivery)

[5] The main Reference for the rest of this section of the paper is BMA (2002).

vii. Istisna'a

viii. Sukuks (Islamic Bonds)

i. Murabaha

Murabaha refers to contracts in which a financial institution purchases goods upon the request of a client, who makes deferred payments that cover costs and an agreed-upon profit margin for the financial institution. The financial institution handles payment to a supplier and the incidental expenses of delivery (against a deferred payment made by the buyer to cover delivery costs and an agreed-upon share of the buyer's markup). Murabaha is the most widely used instrument of Islamic finance with 75% of total contracts being murabaha based. It is widely used in consumer and corporate financing as well as in subordinated or term financing. The responsibilities of the various parties to a Murabaha contracts are set out below:

- The bank buys the asset from the vendor for P.
- The customer then buys the asset from the bank at a marked up price (P+X), which is payable on a deferred payment basis.
- The period covering the deferred payment is effectively the period of financing.
- The title to the assets is transferred to the customer at the time of purchase but usually the customer provides the same or other assets as collateral to the bank for the period of financing.

ii. Mudarabah

A **Mudarabah** is a contract between investors and a financial institution that, acting as a silent partner, invests deposits in a commercial activity that earns each partner an agreed upon portion of the profits of the venture. A Mudarabah can be entered into for a single investment or on a continuing basis with the financial institution acting as a fiduciary. Mudarabah investments may be made for fixed terms and arranged through negotiable instruments (called investment deposit certificates or Mudarabah certificates and thus may have characteristics similar to those

of shares. The responsibilities of the various parties to a mudarabah contract are given below:

- The bank provides to the customer (mudarib) all the capital to fund a specified enterprise.
- The customer does not contribute capital but contributes management expertise (or entrepreneurship).
- The customer is responsible for the day-to-day management of the enterprise and is entitled to deduct its management fee (mudarib fee) from the enterprise's profits.
- The mudarib fee could be a fixed fee (to cover management expenses) and a percentage of the profits or a combination of the two. A classical mudarib fee is based on a percentage of the profits only.
- The balance of the profit of the enterprise is payable to the bank.
- If the enterprise makes a loss, the bank (as the fund provider or rab al maal) has to bear all the losses unless the loss has resulted from negligence on the part of the mudarib.

iii. Musharaka

A Musharaka is a partnership between a financial institution and an enterprise in which the financial institution supplies working capital. Notes of participation sold to investors provide the funding. Musharaka is widely used for joint venture investments. It is also used by Islamic banks for the purchase of real estate, equivalent to a conventional bank mortgage, with the exception that instead of interest the Islamic bank receives a share of the rent of the property. The responsibilities of the various parties to a musharaka contract are given below:

- Both the customer and the bank contribute toward the capital of the enterprise.

- Under a "diminishing" musharaka, the customer buys out the bank's share over a period of time.

- The customer and the bank share in the profits according to the agreed proportions, which may be different from the proportions of capital contributed. Any losses of the enterprise will be borne by the customer and the bank according to their capital contributions.

iv. Leasing

An Ijarah is a lease purchase contract in which a financial institution purchases capital equipment or property and leases it to an enterprise. The financial institution may either rent the equipment or receive a share of the profits earned through its use. Ijarah Wa Iqtina are the same as Ijarah except that the lessee can acquire ownership of the asset by making installment payments. Ijarah is a popular Islamic instrument representing approximately 15% of all transactions. It is most widely used in corporate financing generally on the basis of purchase and lease back arrangements. The responsibilities of the various parties to an Ijarah Wa Iqtina contract are given below:

- The bank buys the asset from the vendor.
- The bank then leases the asset to the customer.
- Periodic rentals are collected by the bank.
- The title of the asset remains with the bank under an operating Ijarah.
- Title passes to the customer under an Ijarah muntahia bittamleek, either gradually over the period of the contract, or at the end.

v. Commodity Murabaha

A **commodity murabaha** is an Islamically acceptable form of a short term inter-bank deposit/placement. An example of the responsibilities of the various parties to a commodity murabaha contract are given below:

- An Islamic Bank instructs a conventional bank (as Agent) to invest say $US 10 million for one month.

- Acting as Agent, the conventional bank buys a commodity from Broker A, value spot on behalf of the Islamic bank. The commodity is then credited to the conventional bank's account with Broker A. The conventional bank will credit Broker A's dollar account with $US 10 million and this account will accrue interest to build up to the deferred payment amount.
- Value spot, the conventional bank (acting as agent on behalf of the Islamic bank) sells the commodity at cost plus mark-up on a deferred payment basis (one month) to Broker B. The commodity is debited to the conventional bank's account with Broker B.
- Broker B will sign an assignment of rights deed to assign the security of the funds to the conventional bank. This will allow the conventional bank to net off the amounts due to Broker A with the amounts payable by Broker B. Similar assignment of rights will allow Broker A and Broker B to net off the conventional bank's commodity positions with them, value spot.
- On maturity (in one month) the conventional bank pays to the Islamic bank profit (mark up) plus the original investment of $US 10 million.
- Commission will be payable to the conventional bank as agent (approximately 25 basis points) and to the commodity brokers (approximately $ 50 per $ 1 million of the commodity) on buying and selling the commodities. These commissions will be built into the price quoted to the Islamic bank and are not accounted for separately.

vi. Salam

A **Salam** (sometimes referred to a Salaf) is a short-term agreement in which a financial institution makes full prepayments for future delivery of a specified quantity of goods on a specified date. A Salam is primarily a deferred sale contract usually used for commodity finance. It is similar to a forward contract where delivery is in the future

in exchange for spot payment. To mitigate the asset risk a financier can enter into a parallel salam.

vii. Istisna'a and Parallel Istisna'a

Istisna'a is primarily a deferred delivery sale contract similar to salam. It is similar to conventional work in progress financing for a capital project. In practice it is usually used for construction and trade finance such as pre-shipment export finance.

Viii. **Sukuks** – Islamic Bonds

Sukuks represent proportionate beneficial ownership. For a defined period the risk and return associated with the cash flows generated from the assets belong to the sukuk holder. The characteristics of a sukuk are similar to a conventional bond with the difference being that they are asset backed.

The activities of Islamic financial institutions differ from those of standard conventional banks in that predetermined interest on financial transactions is prohibited. However, commercial trade and investment for profit is acceptable and encouraged. Islamic financial institutions operate by participating in investments, sharing profits on projects, and earning fees for services rendered. For example, Islamic financial institutions offer investors/depositors participation in risk bearing open-ended, mutual fund type packages rather than fixed interest on deposits.

Several special types of depository accounts and financial instruments permit Islamic financial institutions to engage in some commercial banking activities. Generally, any risk-bearing instruments reflecting a real asset and earning a variable rate of return tied to the performance of the asset is considered to be consistent with Islamic law. Use of financial instruments with returns specified before the investment takes place is not permitted, but sharing of the returns by some formula after the fact is acceptable. Some financial activities may have some sort of established rate of return that could be created, for example, by the purchase and resale of trade goods at trade margins affected by market competition or standard practices.

The functions of Islamic financial institutions can be divided into two parts: the safeguarding of deposits and the partnership of financial institutions with shareholders and depositors in profit-making ventures. Demand deposit facilities (called Amanah or Qard-hasan deposits) are similar to the safekeeping and transferable deposit functions performed in standard conventional banking. The Amanah or Qard-hasan deposits pay no returns, and the financial institution is obligated to preserve the nominal value of the deposit.

The partnership activities of Islamic financial institutions have mixed features that include conventional bank intermediation, mutual funds, or limited partnerships. To a large extent, Islamic financial institutions act as conventional intermediaries by issuing deposit-like instruments to the public in order to raise funds to finance commercial activities. The deposit-like instruments and the financial institutions investments must be designed to expose both the depositors and the financial institutions to profits or losses on the ventures. Thus, the investments – many are negotiable and known by names as "participation term certificates" – have properties similar to those of shares in a company or a mutual fund.

An Islamic financial institution serving as an intermediary may act as a partner or as a provider of services in profit-making ventures and thus has some characteristics in common with mutual funds, financial leasing companies, or brokers. Because of the joint participation among an Islamic financial institution, shareholders, and depositors in equity investments, the financial institution per se is not as exposed to risk as is a conventional financial institution. In addition the structure of the balance sheet of an Islamic financial institution may differ from that of a standard conventional depository institution. For example, the equity capital base of an Islamic financial institution may be larger than that of a conventional depository institution; an Islamic financial institution's loan portfolio may be concentrated in short-term trade instruments; and the nature of banking strategies and risks may differ. It is important to now turn to the sources of funds for Islamic financial institution.

Sources of Funds for Islamic Financial Institutions

- Amanah and Qard-hasan deposits are conventional deposit and transfer accounts for safekeeping and transferable cheque book accounts, and they pay no returns. The deposits are usually considered part of the resources of the financial institution, but the financial institution is required to guarantee the face value of the deposits.
- A Mudarabah, as mentioned earlier, is a contract between investors and a financial institution that, as a silent partner, invest deposits in a commercial activity that earns each partner an agreed-upon portion of the profits on the venture. A Mudarabah can be entered into for a single investment or on a continuing basis with the financial institution acting as a fiduciary. Mudarabah investments may be made for fixed terms and arranged through negotiable instruments (called investment deposit certificates or Mudarabah certificates) and thus may have characteristics similar to those of shares.
- Participation term certificates are long-term investment instruments that entitle the holder to a share of a corporation's profit. These certificates should be classified as deposits if the certificates are treated as liabilities of a financial institution and are not part of its permanent capital base.
- Profit and loss sharing certificates and investments deposit certificates are investors' deposits, such as Mudarabah certificates, that resemble shares in a company and should be classified as deposits.

One of the major problems that Islamic banks have is the non-availability of well organised secondary market into which they could deposit overnight and borrow to cover short term liquidity gaps. Thus, Islamic banks have to rely on commodity murabaha transactions to fill the funding gap. The absence of a secondary market has slowed the growth of Islamic banking and reduced the volume of long-term investments. Over the last two years, the BMA has developed two instruments, Salam Sukuk (short term securities) and leasing certificates with five and three years maturities. The short-term Sukuk instrument

resembles a forward contract. It is a transaction where two parties commit to a sale/purchase of an asset at a future date but at a price determined and fully paid at the time the contract is agreed. As such the contract price is lower than the spot price of the underlying asset/commodity. The medium and long term leasing instruments are leasing arrangements for which rental income will accrue.

There has been an urgent need to establish markets where such instruments can be traded on a day-to-day basis to satisfy liquidity needs and investment preferences of individual investors. In February 2002, the Liquidity Management Center (LMC) was established in Bahrain in order to deal with the Islamic banks' need for liquidity in line with Shariah principles. LMC has started to operate in May 2003 and plans to include a variety of short-term Islamic securities (Sukuk) with different risk and return prospects.

The rising importance of Islamic banking created a need to modify the existing regulatory and supervision framework, applied to conventional banking, to suit the nature of Islamic finance. BMA has introduced a comprehensive set of regulations for Islamic banks in early 2000. The regulations framework is based on the guidelines produced by AAOIFI and the Basle Committee on Banking Supervision. It includes areas such as liquidity management, capital adequacy, asset quality, management of investment accounts, earnings quality, and corporate governance. The regulations framework takes into account both the investment and commercial banking aspects of Islamic banking.

Islamic banks, like their conventional counterparts, are expected to maintain an adequate level of capital at 12 per cent. The BMA requires 50% of the risk-weighted assets of the profit sharing investment accounts to be included in the denominator of the capital adequacy ratio. In line with conventional banks Islamic banks are expected to maintain assets which are of sound quality.

For management of investment accounts, the BMA has also laid down criteria for the banks to monitor and control large exposures. For example, banks are required to obtain prior approval of the BMA to

accept an expose that exceeds 15% of their capital base.[6] Islamic banks have to adopt adequate policies and procedures to safeguard the interests of not only the shareholders of the bank but also those of the profit sharing investment account holders.

In order to determine earnings quality, the BMA requires disclosure of earnings based on amounts received with a breakdown of the aging of the amounts receivable, with additional breakdowns of earnings from the bank's 10 largest customers, related parties and geographical segments. This information is to assist the BMA in assessing the soundness of the bank through monitoring the trend of its earnings quality.

Banks are also required to submit a statement of strategy and objectives for a minimum period of 3 years, outline their organizational structure, and note responsibilities of key management personnel. New recruitment of key management will require prior approval of the BMA and needs to be reported immediately. The bank must also have an independent Shari'a supervision committee complying with the AAOIFI's governance standard for Islamic institutions and an audit committee which must be comprised solely of non-executive directors.

5. The Efficiency Concepts:

A first step in our analysis is to identify the concept of efficiency upon which a banking efficiency can be measured. In a seminal paper, Berger and Mester (1997) argue that cost, standard profit and alternative profit efficiency are the three most important economic efficiency concepts. While earlier research focused on the cost efficiency, recent studies have given more attention to profit efficiency.

A. The cost efficiency:

Cost efficiency gives a measure of how close a bank's cost to the best practice bank's cost that produces the same bundle of output under

[6] Islamic banks in Bahrain have to adpot the Financial Accounting Standard No. 11, issued by AAOIFI, which covers the provisions and reserves recognition measurement and disclosure for Islamic banks.

the same conditions. The cost efficiency is derived from a cost function in which costs, *C*, depend upon prices of inputs, *P*, the quantities of outputs, *Q*, random error, v_c, and cost inefficiency, u_c. The cost function can be specified as following:[7]

$$C = f(Q, P, v_c, u_c) \quad (1)$$

B. *Standard Profit Efficiency:*

Standard profit efficiency measures how close a bank is to producing the maximum possible profit given a particular level of input prices and output prices. So, the actual profit generated by a particular combination of inputs and outputs is compared to the maximum possible profit for the same input-output mix. Bank profits, π, is a function of prices of the outputs, *Z*, prices of the inputs, *P*, random error, v_π, and inefficiency that reduces profits, u_π.

$$\pi = f(Z, P, v_\pi, u_\pi) \quad (2)$$

It can be noted that profit efficiency evaluates bank's performance compared with the best practice point of profit maximization within the data set, whereas cost efficiency evaluates performance, holding output constant at its current level, which generally will not correspond to an optimum.[8] Berger and Mester (1997) argue that profit efficiency is superior to cost efficiency since profit efficiency accounts for errors on the output side (revenues) as well as on the input side (cost). For example, a management decision may raise bank's revenues and costs in the same time. When the increase in revenues is greater than the cost increase, the profit efficiency will improve while cost efficiency may deteriorate. Berger and Mester (1997) argue that a bank may be more

[7] For more details on cost efficiency, see Hussein (2003).

[8] From traditional economic viewpoint, profit efficiency is based on the more accepted economic goal of profit maximization. This is not always acceptable in the case of Islamic economics. One of the referees pointed out that the argument raised by Islamic economists that "profit efficiency" is based on the premise of "profit maximization" and therefore is irrelevant in the case of Islamic banking may not be valied here. Theoretically speaking, Islamic banks are profit optimizers. However, in reality Islamic banks behave as profit maximizers like all business organizations.

successful at minimizing costs than another firm, but it still makes less profits than the other bank because it does a worse job at choosing its output mix.

C. *Alternative Profit Efficiency:*

The alternative profit efficiency is a recent development in efficiency analysis which may be helpful when some of the assumptions underlying cost and standard profit efficiency are not in place. The alternative profit function employs bank's profits as the dependent variable (the same dependent variable as in the standard profit function) and the same explanatory variables as in the cost function in Eq (1). The alternative profit efficiency function can be specified as following:

$$\pi = f(Q, P, v_{a\pi}, u_{a\pi}) \quad (3)$$

In the alternaive profit efficiency, instead of counting deviation from optimal output, as in the standard profit function, output is held constant and prices are free to vary and affect profits. Efficiency here is measured by how close a bank comes to earning maximum profit given its output level. Alternative profit efficiency compares the ability of banks to generate profits for the same level of output and therefore reduces the scale bias that may be present in the standard profit efficiency measure.

Due to difficulty in finding data on prices of outputs and the variance in output quality which may give banks market power in pricing, our study employs the alternative profit efficiency rather than the standard profit efficiency.

6. Econometric Methodology:

The efficiency in financial institutions can be estimated using either parametric methods (such as the stochastic frontier analysis, the thick frontier approach, and the distribution-free approach) or non-parametric techniques (such as data envelopment analysis and free disposable hull analysis). A major drawback of the non-parametric methods is that they do not allow for measurement error and other external variables that may temporarily affect outcomes, assuming that random error is equal to zero. In this case if random error exists,

measured efficiency may be biased with random deviations from the true efficiency frontier.

On the other hand, parametric procedures are more developed and avoid some of the problems associated with the non-parametric techniques. For instance, the stochastic frontier techniques not only allow for an error term but also distinguish between firm-specific effects and random noise. But the stochastic frontier analysis has its own problems. For instance, the stochastic frontier techniques impose a particular functional form that affects the shape of the frontier.[9] If the functional form is mis-specified, measured efficiency may be confounded with specification errors. [10]

Berger and Humphry (1997) argue that it is not possible to determine which of the two major approaches dominates the other since level of efficiency is unknown.

In our study, we use the stochastic frontier approach and address the main limitation of the functional form specification by specifying flexible forms. In fact, the translog model is the most popular form in the literature, which is a flexible functional

form and is expanded by a second-order Taylor series. The translog model of the alternative profit efficiency in Eq (3) can be written as following:

$$In\pi = \alpha_0 + \sum_{i=1}^{3}\alpha_i InQ_i + \sum_{j=1}^{3}\beta_j InP_j + \frac{1}{2}\sum_{i=1}^{3}\sum_{k=1}^{3}\gamma_{ik} InQ_i InQ_k + \frac{1}{2}\sum_{j=1}^{3}\sum_{h=1}^{3}\theta_{jh} InP_j InP_h$$

$$+ \sum_{i=1}^{3}\sum_{j=1}^{3}\varphi_{ij} InQ_i InP_j + In\ v_{a\pi} + In\ u_{a\pi} \qquad (4)$$

The Fourier flexible functional specification has recently become the most acceptable and increasingly applied parametric functional form in measuring banking efficiency. The Fourier flexible specification (FF) includes the standard translog terms, as in Eq (4), plus the trigonometric

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[9] Kaparakis et al (1994) argue that it is difficult to identify exactly the functional form that fits the banking cost and production technology.

[10] For more details see Bauer (1990), Greene (1993), and Berger and Humphrey (1997).

terms. So, the translog form in Eq(4) can be extended into FF form as following:

$$In\pi = \alpha_0 + \sum_{i=1}^{3}\alpha_i InQ_i + \sum_{j=1}^{3}\beta_j InP_j + \frac{1}{2}\sum_{i=1}^{3}\sum_{k=1}^{3}\gamma_{ik} InQ_i InQ_k + \frac{1}{2}\sum_{j=1}^{3}\sum_{h=1}^{3}\theta_{jh} InP_j InP_h$$

$$+ \sum_{i=1}^{3}\sum_{j=1}^{3}\varphi_{ij} InQ_i InP_j + \sum_{i=1}^{3}[\rho_i \cos(Q_i) + \omega_i \sin(Q_i)]$$

$$+ \sum_{i=1}^{3}\sum_{j=1}^{3}[\phi_{ij}\cos(Q_i + Q_j) + \lambda_{ij}\sin(Q_i + Q_j)] + In\, v_{a\pi} + In\, u_{a\pi} \qquad (5)$$

It can be noted that since input prices do not vary much over time, they are not spcecified in trigonometric terms. The FF model is more flexible than the translog and is a global approximation to virtually any cost or profit function (Berger and Mester, 1997). By adding the trigonometric terms to the stochastic model, the frontier will provide a greater flexibility to fit the data wherever it is most needed.

To get estimates of the inefficiencies, *u*, in either Eq (4) or Eq (5), we will use a maximum likelihood procedure (see Cebenoyan *et al*, 1993, Karapakis *et al*, 1994). The choice between the two equations depends on whether the trigonometric terms are significant at the 5% level.

The maximum likelihood estimation involves three steps. The first step involves obtaining OLS estimates of Eq (4) or (5). The OLS estimates are unbiased except the estimate of the α_0. Second, the OLS estimates are used to obtain the starting values. The estimates corresponding to the largest log-likelihood value in the second step are used as starting values in the iterative maximization procedure in the third step. Jondrow et al (1982) have shown that inefficiency (in logarithm) of firm *n* can be calculated by using the distribution of the inefficiency term u_n conditional on ε_n , i.e., $E(u_n/\varepsilon_n)$. The mean of this conditional distribution for the half normal model is shown as:

$$E\,(u/\varepsilon)=\left[\frac{\sigma\lambda}{1+\lambda^2}\right]\left[\frac{\phi\left(\frac{\varepsilon_i\,\lambda}{\sigma}\right)}{\psi\left(\frac{\varepsilon_i\,\lambda}{\sigma}\right)}+\frac{\varepsilon\, i\,\lambda}{\sigma}\right] \qquad (6)$$

Where ф(.) and ψ(.) are the standard normal density function and standard normal distribution, respectively. An inefficiency measure (in percentage) can be calculated where, *INEFF*, is an exponential transformation of the raw estimate of u_n.

$$INEFF = \exp\,(u)\; -1 \qquad (7)$$

INEFF has a minimum value of zero for the most efficient bank in the sample and increase with inefficiency for the other banks with no upper bound. Thus, the efficiency index, EFF, is calculated as follows:

$$EFF = \frac{1}{1 + INEFF} \qquad (8)$$

The great advantage of maximum likelihood estimation is that under a broad set of conditions, parameter estimators are consistent and asymptotically efficient. The estimation of α, β and other coefficients of Eq (4) and (5) are of secondary interest, therefore, limited attention will be paid to the statistical properties of estimators (Greene, 1993).

7. Hypotheses and Model Specifications:

We have two main hypotheses to be examined: First; Bahrain, as a leading financial center in the Gulf, has efficient banking system which is in par with the OECD banking. Second; due to the longer experience of conventional banks and the non-availability of secondary market for Islamic banks, conventional banks outperform their Islamic counterparts in Bahrain.

In order to examine the two hypotheses, we establish an alternative profit efficiency model for Bahrain banking. In our alternative profit efficiency model, profit before taxes is employed as the dependent variable, π. The explanatory variables include three input prices: P_1 is the price of labour and is calculated as total salaries and staff expenses over full time number of staff; P_2 is the price of fund which is measured as interest expenses over time and saving deposits, and P_3 is the price of physical capital which is equal to depreciation over fixed capital and investment in leasing. In case of Islamic banks interest expenses are replaced with profits distributed to depositors. It is worth noting that in case of Islamic banks the depreciation value should include the depreciation in physical capital that is bought for leasing. Failure to take into account this fact, when price of fixed capital is calculated, will lead to bias in the efficiency estimates. In our sample, there are several Islamic banks with large investments in leasing and therefore the depreciation value is greater than the other physical capital value.[11]

One of the main challenges we had is how to identify banks' level of outputs whereby the products of the Islamic banks are different from their conventional counterparts. We have grouped banks' products, based on their nature, to debt and equity financing products. The debt group was also divided into short and long term debt products. In case of Islamic banks, short term debt financing includes murabaha, salam, and qard fund. Long term debt financing includes sukuk, leasing, and istisna. Furthermore, equity-financing consists of securities, mudaraba, musharaka, and investment in properties and managed funds.

In case of conventional banks, products have been grouped as following: short term debt financing (treasury bills, trading bonds, short term loans and advances, and deposits at other financial institutions that mature within one year); long term debt financing (non trading bonds, and medium & long term loans), equity-financing (securities and other investments).

The off-balance sheet items generate income for banks and therefore should not be ignored when modeling the banks' profits, otherwise banks' outputs would be understated (Jagtiani and Khanthavit,

[11] We have estimated our efficiency index with and without taking into account the depreciation of investments in leasing. Based on statistical tests, the former model is superior to the latter model.

1996). The inclusion of the off-balance sheet items as an output is of great importance particularly to Islamic investment banks where restricted investment accounts are not recorded in the balance sheet and considered as off-balance sheet items.

We have estimated our model with and without the off-balance sheet items. Our results show that the model that includes the off-balance sheet items is superior to the other model and has a better fit of the available data. Therefore, our explanatory variables include three outputs: Q_1, is bank's finance in forms of debt (that includes both short and long term products mentioned above), Q_2, is bank's investments, and Q_3, is off-balance sheet transactions.

Recent studies have added additional set of exogenous variables such as assets quality, time trend and environmental variables to the efficiency models. (see for example, Altunbas et al, 2000 and Al-Jarrah and Molyneux, 2003). The environmental variables are required in cross-section studies that include banks from more than one country. In this case, the environmental variables may capture how the difference in central banks rules and regulations affect banking performance. Time trend is usually included to capture the technology progress over time. Recent studies have also incorporated nonperforming loans and loans loss in the cost and profit functions as a proxy for asset quality. Berger and Mester (1997) argue that nonperforming loans and loan losses can be exogenous if caused by negative shocks such as a recession, but they could be endogenous when management is inefficient in managing its portfolio. Berger and DeYoung (1997) found mixed evidence on the exogeneity of nonperforming loans.

Here, we shall test whether the inclusion of provision for loan losses is a significant explanatory variable in the profit efficiency model.

8. Data Analysis and Empirical Results:

With the permission of the BMA and great assistance of the Research Department at the BMA, data were collected directly from Bahrain banks. The dataset includes sixteen banks and the sample period varies across banks. Our sample consists of eight Islamic banks (one commercial and seven investment banks) and eight conventional banks (five commercial and three investment banks) with 186 observations. The

sample is very representative of the population of banks in Bahrain. It should be noted that offshore banks have been excluded because they operate overseas and many of them are just representative offices of multinational banks.

In the proceeding tables, the first seven banks are Islamic investment banks, Bank 8 is an Islamic commercial bank, Banks 9 to 12 are conventional commercial banks and Banks 13 to 16 are conventional investment banks.

Table (3) shows that the size of Islamic banks is relatively smaller compared with conventional banks. In fact, Banks 6 and 7 are very small with total assets of $29 and $41 million, respectively. On the other hand, total assets of the Islamic Bank 5 have exceeded $1 billon. Another distinct feature of Islamic banks in Bahrain is the liabilities composition. Several Islamic banks rely on their share capital to finance their activities while their total deposits are trivial. Several Islamic investment banks act as venture capital rather than banks. Only Banks 2 and 8 are able to mobilise fund through saving and time deposits accounts while Banks 1 and 5 raise funds through restricted investment accounts.

It seems that there is no relationship between bank's growth and bank's strategy in fund raising. For example, although Banks 3, 6 and 7 are not active in deposit raising, Bank 6 and 7 have much slower growth rate compared to Bank 3.

Table (4) shows that the average ratio of off-balance sheet items to total assets in Islamic banks (0.98) is much higher than their conventional counterparts (0.28). This is because the restricted investment accounts are recorded as off-balance sheet items in Islamic banks. Bank 16 is the only conventional bank with high percentage of off-balance sheet items to total assets (0.92). This is because Bank 16 is actively involved, among other things, in managing funds. It is worth noting that off-balance sheet funds are mainly funds from high net worth individuals and institutional investors. The high percentage of the off-balance sheet items to toal assets in Islamic banks indicate that a noticeable number of high net worth individuals and institutional investors have moved to Islamic banking. Table (4) also shows that short term finance to murabaha exceeds 50% of total assets in Islamic banks, but equity-financing has increased over time and currently has reached

38% of total assets. On the other hand, more than 50% of total assets belong to conventional investment banks are in equity-financing. Only two Islamic banks, Bank 3 and 7, with more than 50% of their assets in forms of investment.[12]

Table (5) reports the prices of inputs in year 2001. It shows that the unit of labour costs less in Islamic banks. Average salaries in Islamic banks are 23% lower than in their conventional counterparts. There is also a huge variation in salaries between banks in Bahrain. For example, although both Bank 2 and 16 are investment banks, the average unit of labour in the latter is 15 times greater than in the former, despite the similarity of the employment structure between the two banks.[13] It is worth noting that both banks are quite far from the average salary of 0.081. The unit cost of labour is high in Bank 16 because fund management is the major activity of the bank and several fund mangers are based in Europe and USA and therefore have to receive competitive salaries in line with their peers in other international financial institutions.

With regard to price of fund, deposits in Islamic banks gain 75% of what their conventional counterparts earn. There are four Islamic investment banks (3, 4, 5 and 7) with zero cost of fund since Banks 3, 4 and 7 do not hold any time and saving deposits and depend mainly on their share capital to finance their activities while Bank 5 did not distribute profits to depositors lately since deposits is the smallest source of fund for the bank. Also, due to lack of competition among Islamic commercial banks, it is found that the deposit rate of return on the Islamic commercial bank (2.8%) is the lowest among commercial banks in our sample.

With respect to the price of physical capital, Table (5) reports that the unit cost of fixed capital in Islamic banks is 18% higher than in conventional banks. The variation of the physical capital price among banks is due to banks' difference in policies towards fixed capital. Few

[12] One referee argues that it is not a surprise to find out that debt finance in Islamic banks is greater than 50 percent however it is not in line with the popular proposition of the traditional Islamic economists who have promoted Islamic finance as essentially an equity financing system based on Musharakah and Mudarabah. The referee suggests that in the light of these results traditional Islamic economists need to revisit many of their models.

[13] Managerial staff group is 45% of total staff in Bank 2 and 52% in Bank 16.

banks prefer to rent premises and to reduce investment in fixed assets. Such type of banks that invest small proportion of their assets in fixed capital have higher unit cost of fixed capital.

Our preliminary tests start with examining the functional form to choose between Eq (4) and (5). The FF model is tested against the translog form by estimating Eq (5) and testing whether the coefficients of the Fourier trigonometric terms are significant. The results reject the null hypothesis that the coefficients of the Fourier trigonometric variables are jointly equal to zero. The F-statistic (8.83) is significant at the 1% level which means that the FF model is superior to the translog form.

Next, we examine whether the inclusion of the provision for loans losses variables is necessary in the alternative profit efficiency model. This is done by adding terms that represent the provision for loans losses as exogenous variables in Eq (5) and testing the joint significance of those terms. The F-test cannot reject the null hypothesis that the inclusion of the provision for loans losses variable will add power to our model.

So, we proceed and estimate our model employing the maximum likelihood procedure. The results in Table (6) show that the rise in debt financing, Q_1, and investment, Q_2, have significant impact on banks' profitability. Despite the high ratio of the off-balance sheet items to total assets, Q_3, in Islamic banks (98%), it has insignificant effect on profitability. This is perhaps because the size of Islamic banks in our sample is small and Q_3 has a small proportion in conventional banks. Furthermore, some trigonometric terms are significant which supports our earlier findings that the FF model is superior to the translog form to fit the data.

Tables (7) and (8) report the profit efficiency for the 16 banks. The mean profit efficiency is 0.69 showing that Bahrain banks earn 69% of their potential profits that could be earned by a best-practice bank and 31% are lost to inefficiency. These figures are within the observed range from other profit efficiency studies (for example, Al-Jarrah and Molyneux, 2003; and Mohammed, 2003). The mean profit efficiency of Bahrain banks is in par with OECD countries. For example, Roger (1998) found that profit efficiency of US commercial banks ranges between 68% and 71% over the period 1991-1995.

Figure (1) shows that despite the significant political changes in the Gulf and in oil prices during the 1980s and 1990s, the profit efficiency of Bahrain banks are relatively stable over time. The mean profit efficiency has the range of 0.63 to 0.74 over the sample period 1985-2001. Even when the sample period is shortened to 1992-2001 where data are available for 12 banks, the mean profit efficiency is stable (70%). This means that the domestic factors that may influence banking efficiency such as the BMA rules and regulations were successful in mitigating the consequences of the negative external shocks over the past twenty years.

Table (7) shows that there are six banks with high profit efficiency above 75%, four of them are Islamic. On the other hand, there are three banks with relatively low profit efficiency (around 50%). The three banks are investment banks and two of them are Islamic. It is worth noting that the least performing two banks are the smallest banks in the sample (Banks 6 and 7). Compare with the findings of other studies for developing countries (i.e. Hussein, 2003), the gap between the best and least performing banks is modest whereby most banks' profit efficiency indexes are not far from the mean. This can be seen as an indication for a well-functioning market since banks will not be able to survive if their performance is not in line with their rivals.

Investment and commercial banks in Bahrain have different strategies, clients and products. For instance, commercial banks focus on domestic market and their main customers are residents in Bahrain. On the other hand, investment banks deal mainly with non-residents and as regional rather than domestic banks. Thus, one would expect no relationship between profit efficiency in commercial and investment banks.

When the performance of investment banks is compared with commercial banks, it is found that there is not efficiency gap between investment and commercial banks, despite the apparent differences between the two types of banks in terms of size, products, organisations structure…etc. The means profit efficiency of investment and commercial banks stand at 69% and 68%, respectively. These results are quite interesting and rule out the existence of fragmentation in the banking sector. Furthermore, the results show that the performance of commercial banks is more stable than investment banks since the

standard deviation in the efficiency performance in the investment banks is higher than in commercial banks. A possible explanation is that investment banks exposure to external shocks is greater than commercial banks.

Table (8) shows that Islamic banks outperform the traditional banks in Bahrain between 1985-2001. In general, Islamic banks were able to gain 75% of their potential profits while conventional banks earned 66% of a best-practice bank would earn. Our findings are consistent with the recent results of Al-Jarrah and Molyneux (2003)[14]. In their study that includes banks in Bahrain, Egypt, Jordan and Saudi Arabia, Al-Jarrah and Molyneux (2003) have found that Islamic banks are most profit efficient banks in the sample. They have found that Islamic banks have 75% profit efficiency compared with 67% and 56% in commercial and investment banks, respectively. They argue that this result might be due to the fact that the cost of funds for Islamic banks is relatively cheaper than the cost of funds in other financial institutions.

In order to understand why the profit efficiency differs between Islamic and conventional banks, we need to break the overall profit efficiency to its main components (profit efficiency in investment and commercial banks).

With respect to investment banking, Table (8) shows that there is not much difference in profit efficiency between Islamic and conventional banks. The mean profit efficiency in Islamic banks (70%) is slightly higher than in conventional investment banks (66%), although in the last three years conventional banks have 4% profit efficiency higher than their Islamic counterparts. Despite the insignificant difference in profit efficiency among Islamic and conventional investment banks, one should point out that many Islamic investment banks (Bank 3, 4, 6 and 7) act as venture capital rather than banks. They rely on their share capital to finance their total assets. Other Islamic investment banks in the sample (Banks 1, 2 and 5) have large restricted investment accounts.

In the recent years, there have been increased competitive pressures caused by globalisation, financial liberalisation and rapid

[14] Our study is different from Al-Jarrah and Molyneux (2003) in many aspects such as sample period, data sources, and model specifications.

technological changes. Islamic investment banks will find it difficult to survive in the future unless they change their strategy in order to cope with three major challenges: First; financial markets of other Gulf states will soon adopt the WTO policy of liberal financial services trade and therefore foreign investment banks will enter those markets and be at the doorstep of regional customers of Bahrain investment banks. Second; other regional states such as Dubai are planning to launch financial centres to cater for the region. But Bahrain banks have an advantage over others because of their better knowledge of the regional market and the strong relationship with their clients. Third; the well-regulated market of Bahrain will attract more international banks to enter the domestic market and compete side by side with the small Islamic investment banks. In other words, the future carries tough challenges to Islamic investment banks in Bahrain and strategies that lead to increased market power through combining banks and gaining services delivery advantages should be adopted. A simple regression of profit inefficiency on bank's total assets shows a negative and significant relationship between bank's size and profit inefficiency at the 1% level.[15] This relationship is apparent in small banks in Bahrain, as we have point out earlier, that the least performing two banks in the sample are the smallest banks.[16]

It is highly recommended that Islamic investment banks consolidate through mergers and acquisitions (M&A) activities in order to increase their capacity for growth, to increase their market share in the region and open up new markets with different economic characteristics from markets already served. M&A would offer great opportunities for Islamic banks to grow and add value to shareholders' wealth if the process of mergers can avoid any conflict of interest and misjudgement. During the period 1985-2000, there have been 166,200 worldwide mergers in the financial services industry, valued at US$8.5 trillion (Walter, 2003). More than 6,000 US banks have been absorbed via mergers since 1980. In Europe, a massive merger wave involving leading

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[15] The literature provides little consensus on the relationship between size of banks and profit efficiency.

[16] The simple regression of inefficiency index, *ineff*, on total assets, *TA*, shows the following:

$$\underset{}{ineff} = \underset{(6.93)}{0.84} - \underset{(-3.64)}{0.07\,TA}$$

banks is under way for several years (Rose, 1999). The M&A process is a complicated business and incorporates various aspects, such as selecting a suitable merger partner[17], analysing what will happen to the combined organisation under different possible scenarios, structuring of new entity…etc, that have proven to be uneasy. A variety of factors often get in the way of bank mergers' success, including mismatch of corporate culture and styles, the acquiring and the acquired banks have different reasons for pursuing a merger, and failure to take into account the customers' concerns. The main hurdle that M&A activity may face in Bahrain is that ownership and management are not separate in investment banks. Many owners of small banks would not accept a diminished role in a larger and more viable entity. This is very likely and the recent merger problem of Al-Baraka and the International Investor is a good example. Azzam (2000) argues that Arab banks are unlikely to pursue serious consolidations unless they are forced to do so by their monetary authorities.

Furthermore, M&A may cause unemployment to rise in the short term but since Islamic banks in Bahrain are already small so it is expected that such an increase in unemployment to be insignificant. In fact, M&A may increase employment since investment banks need to open more regional branches to reach their customers at their local markets.

In contrast to the results on investment banks, our findings show a significant gap between the profit efficiency in the Islamic commercial bank (Bank 8) and other conventional commercial banks. The Islamic commercial bank has stable and high profit efficiency over the sample period and its mean profit efficiency stands at 80%. This level is quite high by all standards. On the other hand, conventional commercial banks have earned 67% of their potential profits during the 1985-2001. It can be noticed that the profit efficiency of the conventional commercial banks is always lower compared to the Islamic bank throughout the last 17 years. This finding means that Bank 8 is more successful than other commercial banks in utilising inputs (minimise costs) and/or enhancing revenues (optimise income). Table (5) shows that the average salary in Bank 8 is

[17] Among other factors that most bank merger analysts investigate are the bank history and record of growth, ownership, management, conditions of the balance sheet, income statement and cash flows, and prospects of the local market served by the targeted bank.

far below the mean. In 2001, Bank 8 has paid an average salary which is 50% of the ongoing salary. Furthermore, the deposits rate of return in Bank 8 is the lowest among the 16 banks.

Bank 8 was the only Islamic commercial bank in Bahrain for more than 15 years. The BMA was slow in admitting the second Islamic commercial bank to operate in the domestic market, this happened in 1995. Then, the third Islamic commercial bank has started to operate in 2001. In other words, the lower salaries and rate of return on deposits are a reflection of the monopoly power that Bank 8 has enjoyed for a long period of time when clients who are committed to Islamic products did not find anywhere else to go.[18]

The demand for Islamic financial services has increased over time and therefore total deposits of Bank 8 has doubled over the sample period but the bank was unable to raise its market share. Over 1990-2001, the market share of Bank 8 fluctuated around 5% in terms of total assets and 7.5% in terms of total deposits. Islamic commercial banks in Bahrain have a long way to go to prove themselves as a real rival to conventional banks. Perhaps one should note that the implications of lower salaries would be the inability of Islamic banks to recruit good quality staff and therefore affect their ability to compete and develop. As a step towards developing the Islamic commercial banking, a greater competition has to be introduced in Bahrain.

The experience of the past twenty years shows that monopoly works against growth and development of the banking sector in Bahrain. The BMA has to encourage a broader base of Islamic commercial banking in Bahrain to absorb the increasing demand on Islamic financial services and products. The BMA has to encourage reputable financial institutions, which can provide a comprehensive range of financial services, to operate in the market. Large conventional banks may be encouraged to open Islamic subsidiaries. Such a move will be beneficial to all parties, i.e. conventional banks, customers, banking sector as a whole. It will increase market share of Islamic banks, large banks will maintain their customers who wish to hold Islamic financial products and solve the conventional over-banking problem by directing part of their

[18] When only a few banks compete, they are likely to posses market power, charge higher prices and produce lower quantities.

financial resources towards Islamic products. The broader base of Islamic banking will induce better customer services and new innovations.

9. Conclusions:

We employ the most recent econometric techniques to estimate how close Bahrain banks are from their potential profits. Our sample includes eight Islamic banks (one commercial and seven investment banks) in addition to eight conventional banks (five commercial and three investment banks).

Islamic banks in Bahrain have succeeded to diversify their activities and reduce murabaha transactions as a percentage of total assets. Currently, Islamic banks invest 38% of total assets in securities, associated companies, mudaraba, musharaka, properties and managed funds.

Our results show that on average the 16 banks earn 69% of their potential profits that could be earned by a best-practice bank. Profit efficiency is relatively stable over 1985-2001, despite the changes in oil prices and political instability in the Gulf region. The results also show that the profit efficiency gap between the best and least performing banks is not wide which is a signal for “no fragmentation” in the market. Overall, the mean profit efficiency of Bahrain banks is within the observed range from other profit efficiency studies for OECD banks.

The results show that the performance of commercial banks is more stable than investment banks because investment banks are more vulnerable to external shocks.

Our findings also show that in general Islamic banks outperform their conventional counterparts whereby Islamic banks are able to gain 75% of their potential profits while conventional banks earn 66% of a best-practice bank would earn. The difference between profit efficiency in Islamic and conventional banks is due to the difference in the performance of commercial rather than investment banks.

With respect to investment banks, despite the difference in the structure of Islamic and conventional banks, the mean profit efficiency does not vary much between the two types of banks. The results report

that the mean profit efficiency in Islamic banks (70%) is slightly higher compared to conventional banks (66%), although in the last three years conventional banks have 4% profit efficiency higher than Islamic banks.

The size of Islamic investment banks remains small and there are many Islamic banks with total assets less than $100m. Several Islamic investment banks act as venture capital rather than banks. Islamic investment banks in Bahrain will soon confront with serious challenges, from liberalisation and globalisation of financial services. Other regional states plan to launch financial centres and large foreign banks are expected to enter the region which means that the market share of Bahrain investment banks in the Gulf region is going to be vulnerable. The Islamic investment banks in Bahrain have no choice but to consolidate. Small investment banks have to move towards M&A aiming for a greater market share, eliminating foreign competition and gaining services delivery advantage. M&A has to be planned carefully and motivated strategically in order to be effective. This issue is of immediate concern and banks are unlikely to pursue serious consolidations unless they are forced to do so by their monetary authorities.

With respect to commercial banks, although Bank 8 is the smallest commercial bank in the sample, there is an apparent difference between profit efficiency in the Islamic commercial bank, Bank 8, (80%) and other commercial banks (67%). Bank 8 is able to reduce inputs costs compared to other commercial banks where prices of labour and fund are lower than in conventional banks. This is because Bank 8 was the only Islamic commercial bank in the market for many years. The lack of competition hindered the development of the Islamic financial market in Bahrain. The market share of the Islamic commercial banks remains small, despite the increasing demand on Islamic financial products. The BMA has to encourage a broader base of Islamic commercial banking in Bahrain. The broader base of Islamic banking will induce better customer services and new innovations.

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GLOSSARY

Ijarah

Ijarah is the transfer of ownership of a service for an agreed upon consideration. According to fuqaha, it has three major elements:

- a form, which includes an offer and a consent.
- two parties: a lessor (the owner of the leased asset), and a lessee (the party who reaps the services of the leased asset).
- the object of the (Ijarah) contract, which includes the rental amount and the service (transferred to the lessee).

Investment Assets

Investments assets are assets that are acquired for investments using Islamic financial instruments; for example, investment in real estate or marketable securities that are in compliance with Shari'ah rules and principles.

Mudaraba

This is a partnership in profit between capital and work. It is conducted between investment account holders as owners of capital and the Islamic bank as amudarib. The Islamic bank announces its willingness to accept the funds of investment amount holders, the sharing of profits being as agreed between the two parties, and the losses being borne by the owner of funds except if they were due to misconduct, negligence or violation of the conditions agreed upon by the Islamic bank. In the latter cases such losses would be borne by the Islamic bank.

A Mudarba contract may also be of the concluded between the Islamic bank, as a provider of capital on behalf of itself or on behalf of investment account holders, and business owners and other craftsmen, including farmers, traders etc. A Mudaraba cannot include market operations undertaken for purely speculative purposes, which are a form of gambling.

Murabaha

Sale of goods with an agreed upon profit mark up on the cost. Murabaha sale is of two types. In the first type, the Islamic bank purchases the goods and makes it available for sale without any prior promise from a customer to purchase it. In the second type, the Islamic bank purchases the goods ordered by a customer from a third party and then sells these goods to the same customer. In the latter case, the Islamic bank purchases the goods only after a customer has made a promise to purchase them from the bank.

Musharaka

A form of partnership between the Islamic bank and its clients whereby each party contributes to the capital of partnership in equal or varying degrees to establish a new project or share in an existing one, and whereby each of the parties becomes an owner of the capital on a permanent or declining basis with the right to have his due share of profits. However, losses are share in proportion to the contributed capital. It is not permissible to stipulate otherwise.

- Constant Musharaka

  This is a Musharaka in which the partners' shares in the capital remain constant throughout the period as specified in the contract.

- Diminishing Mushraka

  This is a Musharaka in which the Islamic bank agrees to transfer gradually to the other partner its (the Islamic bank's) share in the Musharaka, so that the Islamic bank's share declines and the other partner's share increases until the latter becomes the sole proprietor of the venture.

Istisna’a

A contract whereby the purchaser asks the seller to manufacture a specifically defined product using the seller’s raw materials at a given price. The contractual agreement of Istisna’a has characteristic similar to that of Salam in that it provides for the sale of a product not available at the time of sale. It also has a characteristic similar to an ordinary sale in that the price may be paid on credit. However, unlike Salam, the price in the Istisna’a contract is not paid when the deal is concluded. A third characteristic of the contractual agreement of Istisna’a is similar to Ijarah (employment) in that labour is required in both.

Istisna’a is a sale contract between al-mustasni’ (the ultimate purchaser) and al-sani’ (seller), whereby al-sani’ – based on an order from the al-mustansi’a – undertakes to have manufactured or otherwise acquire al-masnoo’ (subject matter of the contract) according to specification and sell it to al-mustasni’ for an agreed upon price and method of settlement whether that be at time of contracting, by installments or deferred to a specific future time. It is condition of the Istisna’a contract that al-sani’ should provide either the raw material or the labour.

- Parallel Istisna’a

  If al-mustasni’a (the ultimate purchaser) does not stipulate in the contract that al-sani’ (seller) should manufacture the al-masnoo’ by himself, then al-sani’ may enter into a second Istisna’a contract in order to fulfill his contractual obligations in the first contract. The second contract is called Parallel Istisna’a.

Restricted Investment Accounts

With this type of account, the investment account holder imposes certain restrictions as to where, how and for what purpose his funds are to be invested. Furthermore, the Islamic bank may be restricted from commingling its own funds with the restricted investment account funds for purposes of investment.

In addition, there may be other restrictions which investment account holders may impose. For example, investment account holders may require the Islamic bank not to invest their funds in installment sales transactions or without guarantor or collateral or require that the Islamic bank itself should carry out the investment itself rather than through a third party.

Salam

Purchase of a commodity for deferred delivery in exchange for immediate payment according to specified conditions or sale of a commodity for deferred delivery in exchange for immediate payment.

TABLES

Table (1)

Macroeconomic Indicators

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
GDP Volume (1995=100)	56.6	57.3	63.3	68.7	69	72	80.1	85.5	96.5	96.2	100	104.1	107.3	112.5	117.3	123.6	
Real GDP growth		1.2	10.4	8.6	0.4	4.4	11.2	6.7	12.9	-0.2	3.9	4.1	3.1	4.8	4.3	5.3	4.8
GDP per capita (in Dinnar)	3349	2608	2773	2962	2965	3313	3471	3435	3621	3738	3792	3824	3850	3633	3715	4343	
inflation		-2.3	-1.75	0.3	1.49	0.93	0.77	-0.17	2.54	0.82	2.7	-0.45	2.43	-0.37	-1.34	-0.68	-1.18
Domestic Debt (% GDP)	2.18	6.46	8.04	13.92	14.83	5.34	13.45	18.39	16.55	15.23	14.28	12.95	13.38	17.4	19.36	24.96	
Foreign Debt (% GDP)	5.18	5.68	4.7	4.36	4	3.39	2.93	2.91	2.8	2.65	2.71	2.87	3.58	3.77	4.33	4.32	
Budget deficit (% GDP)*	1	-4.33	-10.25	3.78	-8.32	-6.84	-4.06	-6.39	-0.1	-2.92	-6.14	-2.52	-6.05	-4.0	-5.7	9.8	0.2
Domestic savings (% of GDP)*	47.6	39.9	35.9	39.8	38.1	42.4	35.7	33	35.9	31.9	36.9	40.1	42.1	..	..		
Gross investment (% GDP)*	33.8	32.6	30.1	26.6	27.7	25.1	21.2	21.9	24.8	21.5	18.5	13	17.4	21.4	12.1	17.1	17.8
Foreign Trade (% GDP)*	191.6	173.6	195.2	178.1	187.7	221.7	206	202.6	191.3	169.4	177.7	164	149	128	136	145	..
Industry (% GDP)*	48.5	43.5	44	42	42.5	45.7	39.9	37.2	37.9	37.4	39.9	..	..	..	..	..	..
Agriculture (% GDP)*	1.19	1.37	1.34	1.18	1.14	0.95	0.88	0.91	0.85	0.86	0.86	0.9	0.9	0.9	0.9	0.7	0.7
Population		0.41	0.44	0.46	0.47	0.49	0.48	0.5	0.52	0.54	0.56	0.58	0.6	0.62	0.64	0.67	0.69

Sources:

International Financial Statistics, International Monetary Fund

An Asterisk means the World Development Indicators (World Bank) is the source of data.

Table (2): Financial Ratios

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	19
Demand deposits (%GDP)	10	11	11	9	9	10	12	14	13	11	10	10	10	1
Total deposits (%GDP)	60	70	69	66	67	52	60	61	59	59	60	59	62	7
Time and saving deposits (%GDP)	50	59	59	57	58	42	49	47	46	47	50	49	52	6
M2 (% of GDP)*	61	73	76	74	72	65	62	65	66	65	68	67	75	8
Credit to private sector (% GDP)*									38	40.5	38.04	40.49	43.31	47.

Note:
Total deposits include current, time and saving deposits

Sources:
International Financial Statistics, International Monetary Fund.
The data dource for macroeconomic indicators with * is the World Development Indicators, The World Bank

Table (2): Financial Ratios

	1985	1986	1987	1988	1989	1990	1991	1992	1993
Demand deposits (%GDP)	10	11	11	9	9	10	12	14	13
Total deposits (%GDP)	60	70	69	66	67	52	60	61	59
Time and saving deposits (%GDP)	50	59	59	57	58	42	49	47	46
M2 (% of GDP)*	61	73	76	74	72	65	62	65	66
Credit to private sector (% GDP)*									38

Note:
Total deposits include current, time and saving deposits

Sources:
International Financial Statistics, International Monetary Fund.
The data dource for macroeconomic indicators with * is the World Development Indicators, The World Bank

Table (7): Profit Efficiency Index fo

Bank	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
1										
2	0.85	0.81	0.79	0.81	0.87	0.89	0.88	0.81	0.77	0.82
3										
4										
5	0.65	0.73	0.74	0.8	0.82	0.87	0.82	0.58	0.76	0.88
6						0.26	0.4	0.51	0.68	0.76

7										
8	0.79	0.79	0.82	0.81	0.78	0.8	0.81	0.8	0.81	0.81
9			0.43	0.52	0.54	0.68	0.68	0.62	0.71	0.71
10	0.79	0.56	0.4	0.42	0.58	0.56	0.52	0.57	0.61	0.61
11							0.69	0.62	0.6	0.47
12								0.6	0.65	0.67
13							0.73	0.81	0.81	0.76
14	0.64	0.6	0.49	0.53	0.59	0.58	0.66	0.53	0.61	0.73
15					0.55	0.23	0.78	0.65	0.74	0.36
16	0.69	0.6	0.77	0.76	0.8	0.79	0.78	0.82	0.84	0.83
Mean	**0.74**	**0.68**	**0.64**	**0.66**	**0.69**	**0.63**	**0.71**	**0.66**	**0.72**	**0.7**

Table (5): Prices of Inputs

(in US$ Million)

Bank No	Unit cost of labour	Unit cost of fund	U
1	0.085	0.053	
2	0.017	0.072	
3	0.15	N/A	
4	0.067	N/A	
5	0.107	0	
6	0.042	0.069	
7	0.06	N/A	
8	0.04	0.028	
9	0.082	0.043	
10	0.033	0.053	
11	0.042	0.047	
12	0.039	0.038	
13	0.053	0.029	

14	0.048	0.103	
15	0.174	0.1	
16	0.264	0.057	
MEAN	**0.081**	**0.053**	
Mean in Islamic banks	**0.071**	**0.044**	
Mean in traditional banks	**0.092**	**0.059**	

Table (5): Prices of Inputs

(in US$ Million)

Bank No	Unit cost of labour	Unit cost of fund	Unit cost of Physical Capital
1	0.085	0.053	0.006
2	0.017	0.072	0.069
3	0.15	N/A	0.286
4	0.067	N/A	0.224

5	0.107	0	0.1
6	0.042	0.069	0.008
7	0.06	N/A	0.5
8	0.04	0.028	0.333
9	0.082	0.043	0.568
10	0.033	0.053	0.159
11	0.042	0.047	0.133
12	0.039	0.038	0.081
13	0.053	0.029	0.112
14	0.048	0.103	0.106
15	0.174	0.1	0.027
16	0.264	0.057	0.111
MEAN	**0.081**	**0.053**	**0.176**
Mean in Islamic banks	**0.071**	**0.044**	**0.191**
Mean in traditional banks	**0.092**	**0.059**	**0.162**

Table (7): Profit Efficiency Index for 16 Banks

Bank	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
1														0.71
2	0.85	0.81	0.79	0.81	0.87	0.89	0.88	0.81	0.77	0.82	0.84	0.84	0.84	0.83
3														0.91
4														
5	0.65	0.73	0.74	0.8	0.82	0.87	0.82	0.58	0.76	0.88	0.84	0.84	0.79	0.33
6						0.26	0.4	0.51	0.68	0.76	0.67	0.53	0.56	0.61
7														0.87
8	0.79	0.79	0.82	0.81	0.78	0.8	0.81	0.8	0.81	0.81	0.83	0.82	0.82	0.83
9			0.43	0.52	0.54	0.68	0.68	0.62	0.71	0.71	0.65	0.68	0.66	0.66
10	0.79	0.56	0.4	0.42	0.58	0.56	0.52	0.57	0.61	0.61	0.61	0.64	0.64	0.65

11							0.69	0.62	0.6	0.47	0.56	0.61	0.65	0.63
12								0.6	0.65	0.67	0.7	0.71	0.76	0.77
13							0.73	0.81	0.81	0.76	0.76	0.74	0.79	0.81
14	0.64	0.6	0.49	0.53	0.59	0.58	0.66	0.53	0.61	0.73	0.66	0.66	0.75	0.75
15					0.55	0.23	0.78	0.65	0.74	0.36	0.56	0.69	0.67	0.2
16	0.69	0.6	0.77	0.76	0.8	0.79	0.78	0.82	0.84	0.83	0.78	0.83	0.82	0.81
Mean	**0.74**	**0.68**	**0.64**	**0.66**	**0.69**	**0.63**	**0.71**	**0.66**	**0.72**	**0.7**	**0.7**	**0.72**	**0.73**	**0.69**

Table (3): Deposits and Assets in 16 Bahrain Banks

(in US$ Million)

Bank No	Total Deposits	Total asstes
1	220	375
2	225	319

3	0	411
4	21	93
5	919	1058
6	2	29
7	1	41
8	401	485
9	963	1109
10	425	530
11	2544	2682
12	465	507
13	552	711
14	263	540
15	385	706
16	2347	3443

Note: In case of Islamic banks both total deposits and assests include unrestricted investment accounts.

Table (8): Profit Efficincy in Islamic vs Conventional Banks

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
Islamic Investment Banks	0.75	0.77	0.77	0.8	0.84	0.67	0.7	0.64	0.74	0.82	0.78	0.74	0.73
Traditional Investment banks	0.66	0.6	0.63	0.64	0.64	0.53	0.74	0.67	0.73	0.64	0.67	0.73	0.75
Islamic Commercial Banks	0.79	0.79	0.82	0.81	0.78	0.8	0.81	0.8	0.81	0.81	0.83	0.82	0.82
Traditional Commercial Banks	0.79	0.56	0.41	0.47	0.56	0.62	0.66	0.64	0.68	0.64	0.65	0.68	0.7
Islamic Banks	0.77	0.78	0.79	0.8	0.81	0.74	0.76	0.72	0.77	0.82	0.8	0.78	0.77

Traditional banks	**0.71**	**0.59**	**0.52**	**0.56**	**0.61**	**0.57**	**0.69**	**0.65**	**0.7**	**0.64**	**0.66**	**0.7**	**0.72**
Investment Banks	**0.71**	**0.68**	**0.7**	**0.72**	**0.74**	**0.6**	**0.72**	**0.65**	**0.73**	**0.73**	**0.73**	**0.73**	**0.74**
Commercial Banks	**0.79**	**0.68**	**0.55**	**0.58**	**0.63**	**0.68**	**0.69**	**0.67**	**0.7**	**0.67**	**0.68**	**0.7**	**0.72**

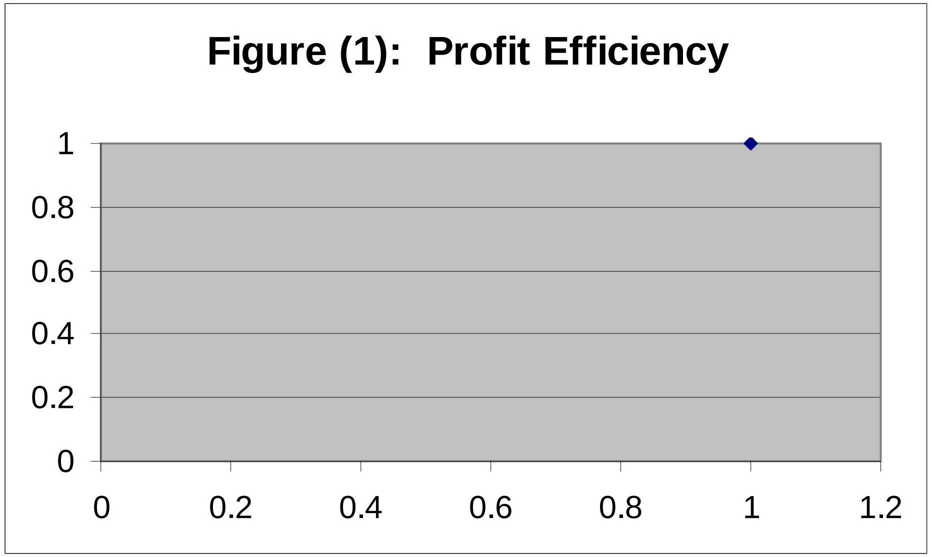

Figure (1): Profit Efficiency
1
0.8
0.6
0.4
0.2
0
0
0.2
0.4
0.6
0.8
1
1.2

Table (6): Maximum Likelihood Estimates of the Stochastic Profit Function

	Coeff.	Std.Err.	t-ratio	P-value
ONE	3.43	0.91	3.77	0.00
LQ1	0.34	0.17	1.96	0.05
LQ2	0.14	0.07	1.89	0.06

LQ3	-0.11	0.11	-0.96	0.34
LP2	0.39	0.25	1.59	0.11
LP3	-0.53	0.14	-3.88	0.00
LQ1M	0.03	0.05	0.56	0.58
LQ1P3	0.13	0.06	2.10	0.04
CQ2Q3	-0.33	0.09	-3.73	0.00
SQ1Q3	-0.16	0.42	-0.38	0.70
Mu/SgmaU	1.99	0.26	7.72	0.00
LambdaSq	3.41	3.21	1.06	0.29
SSQRD(v)	0.29	0.05	5.51	0.00
No of Observations	**=**	**186**		
No of Iterations	**=**	**23**		
Adjusted R-squared	**=**	**0.59**		

Table (4): Assets Structure in 16 Bahrain Banks

Bank No	short term debt / Total assets	long term debt / total assets	investment / total assets	off balance / tota
1	0.55	0.15	0.19	1.14
2	0.61	0.04	0.09	0.56
3	0.17	0	0.6	0
4	0.6	0	0.39	0.29
5	0.39	0.03	0.4	4.83
6	0.56	0.01	0.21	1
7	0	0	0.9	0
8	0.78	0	0.22	0.04
9	0.54	0.36	0.03	0.44
10	0.45	0.16	0.1	0.31
11	0.04	0.66	0.29	0

12	0.7	0.23	0	0.23
13	0.22	0.44	0	0.35
14	0.05	0.11	0.72	0
15	0.13	0.33	0.52	0
16	0	0.02	0.82	0.92
MEAN	**0.36**	**0.16**	**0.34**	**0.63**
Mean in Islamic banks	**0.46**	**0.03**	**0.38**	**0.98**
Mean in traditional banks	**0.27**	**0.29**	**0.31**	**0.28**